REMARKS

Claims 1-30 were pending at the time the Office Action was issued.

Claims 1-30 were rejected. Specifically, the Office Action rejected claims 1-9, 11-19, and 21-29 under 35 U.S.C. §.102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0221120 A1 of Abrashkevich et al. (hereinafter "Abrashkevich"). Claims 10, 20 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Abrashkevich in further view of U.S. Patent No. 6,381,682 to Noel et al. (hereinafter "Noel"). Applicants respectfully traverse the rejections.

In this response, applicants hereby amend claims 1, 11, and 21 and cancel claims 10, 20, and 30. Accordingly, claims 1-9, 11-19, and 21-29 remain pending.

Examiner Interview

Applicants and applicants' attorney are grateful to the Examiner for making time to discuss this case with applicants' attorney on Monday, January 29, 2007. The Examiner is not the original examiner who has previously handled the case, with the case having been recently assigned to the Examiner. Nonetheless, the Examiner was more than willing to discuss proposed amendments and the cited references. Reasonably, the Examiner was not willing to acknowledge, in this case that is new to him, whether the amendments distinguish over the cited references or put the case in condition for allowance. However, the Examiner assured applicant's attorney of his willingness to discuss the case in hopefully working toward allowance of the claims.

Incorrect Assertion of the Basis for Rejection under 35 U.S.C. § 102(e)

Respectfully, applicants assert that the Office Action fails to assert a proper basis for rejection of the claims. Applicants proceed to respond to the substance of the Office Action; however, at the very least, applicants request that the rejections under 35 U.S.C. § 102(e) as stated should be withdrawn.

Both the original Office Action and the present Office Action assert the following incorrect basis for rejection of the claims:

> "3. The following are quotations of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office Action:
>
> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the application for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the application for patent."

(Office Action, Page 2; emphasis added). Applicants acknowledge that a published patent application potentially may serve as a basis for the rejection of a patent application. However, the Office Action states that the foregoing quoted passage includes "quotations of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office Action." Because the rejections under 35 U.S.C. § 102(e) are predicated on a published patent application of Abrashkevich, and not on an issued patent, the Office Actions have failed to assert a proper basis for rejection of the claims.

As noted in the Manual of Patent Examining Procedure (MPEP) Paragraph 7.12.01, the form paragraph included in the Office Action "should only be used if the reference is a U.S. patent issued directly or indirectly from either a national stage of an international application (application under 35 U.S.C. 371) which has an international filing date prior to November 29, 2000 or a continuing application claiming benefit under 35 U.S.C. 365(c) to an international application having an international filing date prior to November 29, 2000." Because the § 102(e) reference is not a U.S. patent, applicants submit that the Office Action fails to properly assert a basis that would support the rejection, and the rejection should be stricken.

Claim Rejections under 35 U.S.C. § 102

Independent claims 1, 11, and 21 each are hereby amended to include limitations of claims 10, 20, and 30, respectively. Claims 10, 20, and 30 previously were rejected under 35 U.S.C. § 103(a), with the Office Action conceding that Abrashkevich fails to teach what is recited in these claims:

> "Abrashkevich fails to teach claims 10, 20, and 30, which all state that the invention is 'further comprising a memory timestamp system that is arranged to store a timestamp within the allocable memory block, wherein the timestamp indicates the time when one of requesting and freeing the allocable memory block is performed.'"

(Office Action, Page 11). Because independent claims 1, 11, and 21 have been amended to include the limitations recited in claims 10, 20, and 30, respectively, applicants respectfully submit that the rejections of claims 1, 11, and 21 under 35 U.S.C. § 102(e) are now moot.

In addition, dependent claims 2-9, 12-19, and 22-29 depend from and apply additional limitations to independent claims 1, 10, and 20, respectively. Because dependent claims are

allowable for at least the same reasons as the claims from which each depends, and the anticipation rejection against claims 1, 11, and 21 is now moot, applicants submit that the rejections of claims 2-9, 12-19, and 22-29 under 35 U.S.C. § 102(e) also are now moot.

Claim Rejections under 35 U.S.C. § 103

Because claims 1, 11, and 21 have been amended to include the limitations of claims 10, 20, and 30 (and these claims are now canceled), applicant responds to the rejections of claims 10, 20, and 30 in the context of claims 1, 11, and 21 as amended. Applicants assert that the rejection should be withdrawn for at least three reasons. First, at the time the invention was made, there would have been no motivation for one skilled in the art to seek other art to augment what Abrashkevich discloses. Second, even if one skilled in the art were aware of both Abrashkevich and Noel, the combined references fail to teach all the elements of the claims as amended. Third, only in hindsight would one have identified the single word recited in Noel that the Office Action offers in support of the rejection.

First, at the time the invention was made, one of ordinary skill in the art would not have been motivated to consider Noel or any other reference to combine with Abrashkevich based on Abrashkevich's own teaching. Abrashkevich, which is entitled "DEFENSIVE HEAP MEMORY MANAGEMENT," teaches defensive memory management within the heap by allocating separate pools of memory for each application, and then when the application requests allocation or release of a block of memory, the block is allocated from or released into the application's designated memory pool, respectively:

> [0022] In a preferred embodiment, a memory manager maintains various data structures within the heap or primary allocation of memory. FIG. 2 shows a structure of a storage memory Heap 10 for a given application. Referring to FIG. 2, Heap 10 is divided into two major areas: Heap Header 12 a primary data structure containing first attribute sets describing the primary allocation of memory, containing control heap information, heap properties and data structures, and Heap Data 15 containing large blocks of memory (subheaps) that are allocated and freed upon request. Heap 10 is used to logically group available memory into a set of independent subheaps or secondary allocations of memory, called memory pools, Pool 18 and Pool 20. Similar to a heap, a pool is divided into two major areas: such as Pool Header 22 and Pool Header 24, a secondary data structure containing secondary attribute sets describing the secondary allocation of memory, containing control pool information, pool properties and data structures, and Pool Data 14 and Pool Data 16 containing tertiary allocations of memory or blocks; Block 26 and Block 28 of Pool 16 and Block 30, Block 32 and Block 34 of Pool 20, which are blocks of memory that are allocated and freed upon request. Blocks further have an associated tertiary data structure containing tertiary attribute sets describing the tertiary allocation of memory. Each pool can have a different size and its own set of properties. Pools are allocated from a heap and used for subsequent memory block suballocations such as Block 26 and Block 28 of Pool 16. A memory block is a block of memory in the storage heap of a requested fixed size. It is typically used to store a program object of some data type. The data areas within blocks are contiguous and non overlapping.

(Abraskevich, Paragraph 0022; emphasis added.) Abraskevich thus seeks to avert memory heap problems by instituting an additional level of hierarchical subdivisions within the heap. In dividing the heap into subheaps or pools, Abrashkevich seeks to prevent one application from accessing memory allocated to another application by restricting each application's memory access to separate sections of the heap.

Moreover, Abrashkevich expressly states that its proffered solution, in dividing the heap into separate pools, also would preserve memory integrity in a multiprocessor system. Again, by dividing the heap into separate pools, each processor running an application or process would be constrained to access memory in its own pool, thereby eliminating memory contention problems:

> [0023] An advantage of using memory pools is that any suballocations made within the pool are not required to be freed individually before freeing the entire pool. This assures that memory that is no longer needed is returned to the heap free memory list for reuse, increasing the availability of usable memory for future allocation requests. Also each pool has a separate lock that significantly reduces lock contention when several processes[sic]/threads allocate memory blocks from different pools on computer systems with several CPUs. In addition assigning each thread a separate memory pool can essentially reduce cache sloshing (when the current value of a cache line rapidly migrating from cache to cache resulting in a cache miss and a memory read).

(Abrashkevich, Paragraph 0023; emphasis added). Thus, Abrashkevich expressly discloses that its memory pool system will preserve heap integrity even when the heap will be accessed by several applications or multiple CPUs.

Because of Abrashkevich's express disclosures, one of ordinary skill in the art at the time the invention was made would not have looked to Noel to reach what is recited in the claims. Noel describes a "METHOD AND APPARATUS FOR DYNAMICALLY SHARING MEMORY IN A MULTIPROCESSOR SYSTEM." However, if one skilled in the art with knowledge of Abrashkevich hypothetically were to contemplate what might be done to apply Abrashkevich in a multiprocessor system, Abrashkevich answers that concern: as previously quoted, Abrashkevich accommodates multiple applications and/or multiple processor situations. In other words, Abrashkevich teaches away from seeking another reference in the multiprocessor context. There would have been no motivation for one skilled in the art at the time the invention was made to have considered other art regarding multiprocessor situations, and thus no individual would have investigated a reference such as Noel that, by its own title, is expressly directed to a "MULTIPROCESSOR SYSTEM."

Second, for the sake of argument, even if one of ordinary skill in the art at the time the invention was made would have thought to combine Abraskevich and Noel, the combination of references fails to teach all of the elements recited in the claims. As discussed at length, Abrashkevich teaches dividing the heap into pools from which memory blocks are allocated to the application to which the pool is dedicated. Also, as conceded by the Office Action, Abrashkevich "fails to teach . . . 'a memory timestamp system that is arranged to store a timestamp within the allocable memory block.'" (Office Action, Page 11.) Applicants wish to note that limitation not only specifies that the timestamp is stored within the allocable memory block, but also that the timestamp "indicates a time when one of the requesting and the freeing of the allocable memory block is performed."

The Office Action asserts that Noel makes up for the shortcoming of Abrashkevich in that "Noel declares a 'timestamp.'" (Office Action, Page 11.) However, Noel's "timestamp," which is mentioned in passing as described below, is not "a timestamp within the allocable memory block, wherein the timestamp indicates a time when one of the requesting and the freeing of the allocable memory block is performed" as recited in the claims.

Noel mentions the word "timestamp," but its timestamp is associated with the creation of an operating system instance in a multiprocessor system; Noel teaches nothing about using a timestamp stored in an allocable memory block as recited in the claims. Noel describes an "adaptively-partitioned, multi-processor computer system (APMP)" (Noel, Column 22, Lines 62-63) which supports multiple instances of operating systems (Noel, Abstract). Noel's single, lone mention of the word "timestamp" occurs in describing an "APMP database which keeps track of

operating system instances which are members of a sharing set." (Noel, Column 23, Lines 41-43). More specifically, "APMP databases store information relating to the state of active operating system instances in the system." (Noel, Column 23, Lines 13-15; emphasis added.) A "sharing set" refers to each "operating system instance . . . booted in at least one of the partitions" (Noel, Column 23, Lines 10-11) supported by the system.

The sole mention of a timestamp arises in describing the "initial header portion of an APMP database" (Noel, Column 23, Line 66). As previously mentioned, the APMP database describes the instances of operating systems running on the system. The "APMP database is stored in shared memory." (Noel, Column 24, Line 35.) The single mention of the word "timestamp" is within the phrase "instance membership timestamp" (Noel, Column 24, Line 31) which is included within an "array of node blocks" (Noel, Column 24, Line 22) contained in an APMP database header section (Noel, Column 24, Line 4).

Other than the single mention of the word "timestamp," Noel provides no further description of the content and use of the timestamp beyond the phrase "instance membership timestamp." In context, the best one can do is to infer that the "instance membership timestamp" specifies when an instance of the operating system joined a "sharing set." On the other hand, there is no mention of any "memory timestamp that is arranged to store a timestamp within the allocable memory block, wherein the timestamp indicates a time when one of the requesting and the freeing of the allocable memory block is performed" as recited in the claims. Accordingly, the references cited, neither alone nor in combination, disclose what is recited in the claims.

Third, and finally, applicants submit that the Noel reference and its solitary mention of the word "timestamp," even though any combination of Abrashkevich and Noel fail to teach what is recited in the claims, only could have been introduced through the impermissible exercise of hindsight. As previously emphasized, the word "timestamp" appears in the Noel reference only one time, and it appears in a wholly different context dealing with instances of operating systems, not a "a timestamp within the allocable memory block, wherein the timestamp indicates a time when one of the requesting and the freeing of the allocable memory block is performed." Accordingly, one would conclude that only after having read what is recited in the claims and by doing a search on the prior art for the word "timestamp" would one have found the Noel reference. Further, only through this hindsight would one have tried to retrofit the inapposite teachings of Noel to attempt to overcome the shortcomings of Abrashkevich. Respectfully, such hindsight is impermissible, and the rejection under 35 U.S.C. § 103(a) combining Abrashkevich and Noel must be withdrawn.

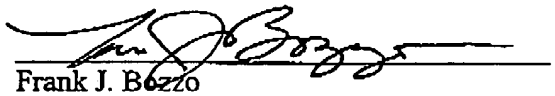
In sum, there would have been no motivation to combine Abrashkevich and Noel, they fail to teach what is recited in the claims, and their combination could only have been formed in hindsight. Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) must be withdrawn against claims 1, 11, and 21 as amended. In addition, because claims 2-9, 12-19, and 22-29 depend from and apply additional limitations to claims 1, 11, and 21, respectively, applicants respectfully assert that these claims are patentable over the references cited.

CONCLUSION

In view of the foregoing amendments and remarks, all pending claims are believed to be allowable and the application is in condition for allowance. Therefore, a Notice of Allowance is respectfully requested. Should the Examiner have any further issues regarding this application, the Examiner is requested to contact the undersigned attorney for the applicant at the telephone number provided below.

Respectfully submitted,

MERCHANT & GOULD P.C.



Frank J. Bozzo
Registration No. 36,756
Direct Dial: 206.342.6294

MERCHANT & GOULD P.C.
P. O. Box 2903
Minneapolis, Minnesota 55402-0903
206.342.6200
(FJB/ab)